;login:

The USENIX Association Newsletter

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The closing date for submissions for the next issue of *;login:* is October 31, 1986

USENIX THE PROFESSIONAL AND TECHNICAL UNIX® ASSOCIATION

NOTICE

;login: is the official newsletter of the USENIX Association, and is sent free of charge to all members of the Association.

The USENIX Association is an organization of AT&T licensees, sub-licensees, and other persons formed for the purpose of exchanging information and ideas about UNIX[†] and similar operating systems and the C programming language. It is a non-profit corporation incorporated under the laws of the State of Delaware. The officers of the Association are:

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Members of the UNIX community are heartily encouraged to contribute articles and suggestions for *;login:*. Your contributions may be sent to the editors electronically at the addresses above or through the U.S. mail to the Association office. The USENIX Association reserves the right to edit submitted material.

;login: is produced on UNIX systems using *troff* and a variation of the –me macros. We appreciate receiving your contributions in *n/troff* input format, using any macro package. If you contribute hardcopy articles please leave left and right margins of 1″ and a top margin of 1½″ and a bottom margin of 1¼″. Hardcopy output from a line printer or most dot-matrix printers is not reproducible.

Acknowledgments

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Third Computer Graphics Workshop

USENIX is sponsoring a limited enrollment workshop on current and future developments in computer graphics. The workshop will be held in Monterey, California, at the DoubleTree Hotel, on November 20 and 21, 1986.

The Program Committee for the Workshop consists of:

Reidar Bornholdt, Chair	Columbia University
Tom Duff	AT&T Bell Laboratories
Lou Katz	Metron Computerware, Ltd.
Brian E. Redman	Bell Communications Research

Registration and Hotel Information

The registration fee is $200. Advance registration is necessary for this workshop. The registration deadline is November 12, 1986.

The hotel charges $75/night for either a single or a double room, plus a hotel tax of 10%. One night's deposit is required.

The USENIX Conference Office will handle registration and make all hotel reservations. The registration fee and hotel deposit may be paid by check or by VISA, MasterCard or American Express card.

For further program information, contact:

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Proceedings of the first graphics workshop appeared in *;login:*; those of the second workshop were published as a separate publication. The proceedings of the third workshop will also be published separately.

Contributions to ;login:

As the Technical and Professional Association of UNIX users, we would like to see *;login:* develop into a true professional journal: perhaps eventually splitting into a newsletter plus a journal. In an attempt at raising *;login:* to something like a refereed journal, Rob Kolstad will act as technical advisor to me. Sometime during the next few months, USENIX hopes to make this a regular, part-time post and to appoint a permanent Technical Advisor.

The quantity and quality of *;login:*'s contents are a function of the quality of submissions. Please send contributions via e-mail to *usenix!login*. Please send any graphics to the office by US mail, in original form.

Your contributions should be in *n/troff* input format, using any macro package.

Peter H. Salus
Executive Director

Cogito, An Expert System to Give Installation Advice for UNIX 4.2BSD

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and
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When you try to use a computer, your first effort inevitably fails. You then recall the sage advice, "If all else fails, read the instructions." So you decide to do this. But where do you start? For the tasks described in this paper the instructions were hundreds of pages long spread over a several manuals. So we wrote an expert system to help the human use this data.

In this paper we will discuss *Cogito*, an expert system that gives installation advice for bringing up the UNIX 4.2BSD operating system on a VAX computer [1]. A detailed reference manual is currently used for installation instructions. Task complexity limits this method. Cogito filters the information and presents only relevant advice about the user's computer system. Cogito remembers data the user has previously entered and uses this to customize its response. Cogito, written in M.1 and running on a personal computer, uses if-then production rules to encode the knowledge. Cogito's knowledge base has two components: classification knowledge and process knowledge. Classification knowledge transforms one kind of knowledge into another. Production rules are appropriate for Cogito's classification knowledge. Process knowledge directs the flow of information and the explanation for that knowledge. Cogito's process knowledge is difficult to encode with production rules because in describing the installation process the expert does not think in terms of rules.

Problem Statement

Installing a computer system is an evolutionary process consisting of a series of operations that transform a computer into a complex system capable of supporting many users and functions. There are two basic types of system installation: system building and device integration. System building is required when the computer hardware is delivered and involves installation of the operating system. Device integration is required when a new device is obtained and must be integrated with the rest of the system. This paper will only discuss system building.

The knowledge needed to do system installation is fact-intensive because hardware and software designers have already made many decisions regarding the system structure. Consequently, system installation dictates a long, interconnected series of steps to get the hardware and software to interact correctly. This process is especially complex with the UNIX operating system since it is designed to be as portable as possible, supporting many different types of computers and devices. For example, 4.2BSD UNIX supports three VAX models, three communication buses, 21 disk drive types, 11 tape drive types and 22 device types. Simple combinatorics yields the number of 45,000 minimal systems (one VAX cpu, one communication bus, one disk drive, one tape drive and one console terminal). Almost no one has a minimal system. However, our Systems and Industrial Engineering Department's VAX-UNIX system is close to minimal: it has one VAX cpu, two communication buses, one disk drive, one tape drive and two other devices. For this system there are approximately a half a million combinations.

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Established Method

Information regarding system installation of UNIX 4.2BSD is contained in the *UNIX Systems Manager's Manual* [2], and the *UNIX Programmer's Manual Reference Guide* [3]. The *UNIX 4.2BSD Systems Manager's Manual* is an extensive reference document that explains in detail the making and installing of UNIX 4.2BSD. The *Programmer's Manual Reference Guide* provides detailed information about specific devices that may be attached to the computer. Unfortunately, these reference manuals are also forced to serve as the only tutorials available for making and installing the UNIX system. They are not well suited for this task for several reasons.

First, the manuals' structures do not provide a model of the problem for system installers to base their learning on. Additionally, the information is often written at a higher level than inexperienced system installers can understand and explanations are sometimes pages distant from the first example. Finally, the wide variety of possible VAX computers, disks, tape drives, controllers, printers, terminals and other hardware makes it impossible for a linear explanation, such as in a book, to distinguish all the relevant information for a particular user. Consequently, to install the operating system with this method, a system installer must painstakingly seek to understand and extract the information needed for his or her system from the vast amount of details for all possible combinations provided by the manuals.

Example Rules

We transformed this vast amount of information into if-then production rules for our expert system. The following shows examples of these rules.

This rule sets up the correspondence between the DEC disk name and the DEC-bus that it is attached to.

```
dt-hp-a: if disk = 'RM03'
         or disk = 'RM05'
         or disk = 'RM80'
         or disk = 'RP06'
         or disk = 'RP07'
         then disk-bus = 'MASSBUS'.
```

This rule establishes the first level correspondence between DEC disk names and their UNIX counterparts.

```
dt-hp-b: if disk = 'RM03'
         or disk = 'RM05'
         or disk = 'RM80'
         or disk = 'RP06'
         or disk = 'RP07'
         then standalone-disk-name = hp.
```

These rules establish the UNIX-to-UNIX relationship between the standalone disk names and their controller designations. This demonstrates the nonobvious relationships that occur in UNIX-land that are very similar to the English language tradition of irregular verb forms; some forms fit the pattern, while most do not.

```
dtc-1: if standalone-disk-name = hk
       then controller = hk.

dtc-2: if standalone-disk-name = ra
       then controller = uda.

dtc-3: if standalone-disk-name = rx
       then controller = fx.

dtc-4: if standalone-disk-name = up
       then controller = sc.
```

These two rules show that non-DEC disks can be attached to either the UNIBUS or the MASSBUS, but the UNIX disk types are decidedly different.

```
dt-26:  if disk  =  'AMPEX 330M'
        and disk-bus =  'UNIBUS'
        then disk-type = capricorn.

dt-34:  if disk  =  'AMPEX 300M'
        and disk-bus =  'MASSBUS'
        then disk-type = 9300.
```

User Satisfaction

Cogito is a better method for system installation than using the *UNIX Systems Manager's Manual*, in terms of overall user satisfaction, because the amount and relevancy of the information presented is significantly increased. For example, in the disk definition state the file */etc/fstab* must be created. Assume that the boot disk is a 'AMPEX 300M' connected to uba0 at drive 1. This implies that the disk address is 1. Also assume the user's name is 'Pat' and that he is ready to install *fstab*. The instructions given in the manual are generic and therefore the human must relate the general instructions to the specific application. Figure 1 is a copy of a the relevant section of the manual.

4.4.1. Initializing /etc/fstab

Change into the directory /etc and copy the appropriate file from:
```
    fstab.rm03
    fstab.rm05
    fstab.rm80
    fstab.ra60
    fstab.ra80
    fstab.ra81
    fstab.rp06
    fstab.rp07
    fstab.rk07
    fstab.up160m (160Mb up drives)
    fstab.up300m (300Mb up drives)
    fstab.hp400m (400Mb hp drives)
    fstab.up (other up drives)
    fstab.hp (other hp drives)
```
to the file /etc/fstab, i.e.:
```
    # cd /etc
    # cp fstab.xxx fstab
```
This will set up the initial information about the usage of disk partitions, which we see how to update more below.

Figure 1: Installation of *fstab* from [2].

Cogito's instructions to complete the same task are:
```
    # cd /etc
    # cp fstab.up300m junk
    # vi junk
    (Edit the file, Pat.)
        a. Add the line '/dev/up0b::sw::'.
        b. Give the global substitute command ':g/up0/s//up1/'.
        c. Save the new contents and quit the editor.)
    # cat junk >> fstab
```

Cogito has remembered that half an hour ago the user said his name was Pat and his disk was an AMPEX 300M and has used this information to make its instructions specific. Cogito's instructions are personalized, relevant to the user's task, clear and complete!

This example illustrates that the manual's instructions are incomplete, and rely on previous knowledge and implicit knowledge: they are incomplete because the swap partition */dev/up0b*, must be added to the file; they rely on previous knowledge because the user must recall that the UNIX standalone disk name for a 'AMPEX 300M' is 'up'; and they rely on implicit knowledge because the user must somehow know that the disk address of the partitions needs to be changed from '0' to '1'.

To address the issue of whether Cogito is the best system for advising on UNIX system installation, qualifications must be made. As originally designed, Cogito has two user classes: a system builder and a system integrator. It's interesting to note that although the knowledge base is the same for both kinds of users, Cogito is inadequate for the system integrator user. All the appropriate information is given to the user but the instrument on which it is displayed is wrong. Transmission of the advice via a personal computer seems inconvenient when the VAX computer is running. Ideally, Cogito should have the capability to run on the VAX computer once it is up and running. This includes the ability to transfer information "learned" by Cogito in the system building stage into a database where it can be retrieved when configuring a new device. Unfortunately, this cannot be done because M.1 only runs on a personal computer.

Information Flow

Information flow is concerned with the data transfer from the user into Cogito and the corresponding transfer of advice from Cogito to the user. The information flow depends on the knowledge base structure. Since Cogito is based on the backward chaining inference engine M.1, both direction flows (into and out of Cogito) depend on a goal-oriented knowledge base structure. Ideally the knowledge base is a true reflection of how the expert thinks about the problem. In Cogito, the knowledge base was originally constructed without reference to a particular inference engine. For instance, an original rule near the end of the configuration state was:

```
if config done then
    # config NAME
    # cd ../NAME
    # make depend
    # make vmunix
```

As implemented in Cogito the control method of the inference engine imposed a backward chaining thought process to occur. Hence, using M.1, the implemented version of the same rule is:

```
if  display(' # config NAME ')
and display(' # cd ../NAME')
and display(' # make depend ')
and display(' # make vmunix ')
then config is done.
```

Looking at Cogito from the end user's viewpoint, the questions asked and the advice presented appear to be given in a logical, relevant and concise manner. However, the implemented knowledge base structure of Cogito suffers from an unnatural viewpoint, forced by the control method used in the inference engine.

Choice of Expert System Shell

We had two conveniently available expert systems shells to choose from: M.1, primarily a back chainer, and OPS5, primarily a forward chainer. Although the problem domain seems to be data driven, which would suggest a forward chainer, we found that either shell worked. The knowledge base was just a little longer using the back chainer. The decision to use M.1 was primarily based on the differences in rule implementations. Cogito's rules are English-like phrases, whereas, with OPS5, the rules are reminiscent of LISP code, the implementation language. Experts not familiar with LISP have trouble reading and understanding the content of the rules. It is important that the knowledge engineer be able to verify with the expert that the intent of the rule is the same as the coded rule. This is especially crucial if the expert system is giving incorrect advice.

Testing

Testing this expert system was difficult. It was impossible to present it with every possible combination of inputs and evaluate its outputs. The best test we devised was to let the intended users use it in many hypothetical circumstances. If the knowledge base was incomplete, then, in some situations the advice given to the users should be incorrect. Cogito was tested by the Systems Administrator of the Department of Systems and Industrial Engineering, a Professor of Systems and Industrial Engineering, and the Systems Administrator for the Department of Computer Science. They all found Cogito's advice to be complete and correct.

One of our colleagues suggested that the system be tested by 12 random graduate students and that the results be subjected to statistical analysis. We felt this would be unfair, because the system was designed to be used by people with a good knowledge of computer hardware and UNIX software and we only knew of four such people on the University of Arizona campus (the builder of the system and the three testers).

In an effort to bolster our testing we asked several non-expert computer users to try the system. Their evaluations tended to emphasize the difficulties they had using it or making sense of its queries or output, and the extent to which they could "fool" the system with plausible (but nonsensical) inputs. They did not fool this system. So, we did our best to test Cogito, but we were not able to prove that it would always give the correct advice. Testing seems to be a problem with most expert systems.

The best way to test this system would have been to use it to bring up a a brand new system. Unfortunately no such system was available. The next best test would have been to shut down an existing system, and rebuild it using Cogito. Unfortunately no one wants to let you shut down their operational system. Recently, however, due to inadequate glue on the heads of our RA81 disk, we had to rebuild our system from the distribution tapes. Cogito helped us. We found a few omissions in Cogito's advice, but no mistakes. It was a big help. We completed the task in about 12 hours.

This experience has reinforced our belief that all expert systems are inadequately tested. There are no quantitative procedures for testing expert systems. Most tests merely involve running a few case studies; they do not exhaust all possibilities. For example, we are confident that Cogito works well for a small VAX 750 system but we cannot be sure that it will work as well for a 730 or a 780.

Appropriateness of Expert System Technology

How can one identify a task that is appropriate for an expert system? First, there must be a human expert who performs that task better than most other people. Second, the task must be one to which the human expert can explain the solution in words, not one that requires the expert to draw a picture to explain what to do. Third, can the problem be solved routinely in a 20 minute, or even a one hour, telephone conversation with the expert? If so, the problem is a good candidate for a personal computer based expert system. If a human would take two days to solve the problem, it is far too complicated for an expert system; if the human gives the answer in two seconds, it is too simple.

Given these criteria, giving advice for bringing up UNIX on a VAX computer was inappropriate for a personal computer based expert system. Bringing up UNIX cannot be done in a one hour conversation with an expert. We think it would take an expert one to two days to do the task. (It took us three months to do it the first time!) The 700 rules of this expert system filled up two floppy disks. We succeeded in making an expert system that worked, but it was hard work. We think a more powerful tool (such as KEE, S.1, ART, or Knowledge Craft) would have been more appropriate.

For further information about Cogito, phone Professor Bahill at (602) 621-6561.

Acknowledgement

We thank Phil Kaslo and Bill Ganoe for testing our expert system.

References

[1] P. N. Harris, *COGITO: An expert system that gives advice for making and installing UNIX 4.2BSD on VAX-11 series computers.* University of Arizona: master's thesis, 1986.

[2] *UNIX Systems Manager's Manual.* El Cerrito: USENIX Association, 1985.

[3] *UNIX Programmer's Manual Reference Guide.* El Cerrito: USENIX Association, 1985.

BSD UNIX Manuals – The Next Chapter

As all members must surely know by now, the USENIX Association-sponsored production of 4.2BSD UNIX manuals has been an overwhelming success. There have now been four separate printings since April, 1984 (totaling over 15,000 copies of the five-volume manual set). Membership response to the manuals has been very favorable, including such aspects as the new document organization (thanks to Sam Leffler), the 6″×9″ production format, and the inexpensive pricing. With the long-awaited release of 4.3BSD now official, however, a new version of the manuals is appropriate as well. This article describes the changes that have been incorporated into the new 4.3BSD manuals, as well as details like when they will be available and what they will cost.

Nota Bene – **USENIX's commitment to the 4.3BSD edition of manuals means that there will be NO additional printing runs of 4.2BSD manuals. Since there are very few 4.2BSD manuals remaining in our inventory (with the exception of a few hundred UNIX Programmer's Manuals), if you plan to order these older manuals it is imperative that you do so immediately. When current inventories of 4.2 manuals are exhausted, no additional orders for the 4.2BSD version will be accepted.**

The 4.3BSD manual sets are significantly different from the 4.2BSD edition; changes include better quality of reproductions and a new and extensive indexing system funded by USENIX, and many additional documents. As with the 4.2 edition, 4.3BSD manuals are being sold only in sets. Pricing and ordering details are given below.

Manual Descriptions

The basic composition of the three manual sets is outlined here, with a detailed description of each volume's contents given later. All manuals are printed in a photo-reduced 6″×9″ format with individually colored and labeled plastic "GBC" bindings. All documents and manual pages have been freshly typeset in order to provide top quality reproduction and all manuals have "bleed tabs" and page headers and numbers to aid in the location of individual documents and manual sections.

> User's Manual Set (3 volumes)
> > Volume 1, User's Reference Manual
> > Volume 2, User's Supplementary Documents
> > Volume 3, Master Index
>
> Programmer's Manual Set (3 volumes)
> > Volume 1, Programmer's Reference Manual
> > Volume 2, Programmer's Supplementary Documents
> > Volume 3, Programmer's Supplementary Documents
>
> System Manager's Manual (1 volume)

While some manual sets are three separate volumes, you may only order complete sets; i.e. you **cannot** order a Volume 2 of the User's Manual without also ordering Volumes 1 and 3.

Manual Contents

UNIX User's Reference Manual (URM)

The following sections from Volume 1 of the original UNIX Programmer's Manuals (UPM): preface, introduction, table of contents, permuted index, section 1 (commands), section 6 (games), and section 7 (miscellaneous).

UNIX User's Supplementary Documents (USD)

This volume contains documents which supplement the manual pages in *The UNIX User's Reference Manual* for the Virtual VAX-11 version of the system as distributed by U.C. Berkeley, and Volumes 2a and 2b as provided by Bell Laboratories:

Getting Started
> UNIX for Beginners – Second Edition
> Learn – Computer–Aided Instruction on UNIX (Second Edition)

Basic Utilities
> An Introduction to the UNIX Shell
> An Introduction to the C shell
> DC – An Interactive Desk Calculator
> BC – An Arbitrary Precision Desk-Calculator Language

Communicating with the World
> Mail Reference Manual
> The Rand MH Message Handling System
> How to Read the Network News
> How to Use USENET Effectively
> Notesfile Reference Manual

Text Editing
> A Tutorial Introduction to the UNIX Text Editor
> Advanced Editing on UNIX
> Edit: A Tutorial
> An Introduction to Display Editing with Vi
> Ex Reference Manual (Version 3.7)
> Jove Manual for UNIX Users
> SED – A Non-interactive Text Editor
> AWK – A Pattern Scanning and Processing Language (Second Edition)

Document Preparation
> Typing Documents on UNIX: Using the –ms Macros with Troff and Nroff
> A Revised Version of –ms
> Writing Papers with *nroff* using –me
> –me Reference Manual
> NROFF/TROFF User's Manual
> A TROFF Tutorial
> A System for Typesetting Mathematics
> Typesetting Mathematics – User's Guide (Second Edition)
> Tbl – A Program to Format Tables
> Refer – A Bibliography System
> Some Applications of Inverted Indexes on the UNIX System
> BIB – A Program for Formatting Bibliographies
> Writing Tools – The STYLE and DICTION Programs

Amusements
> A Guide to the Dungeons of Doom
> Star Trek

Master Index

This volume contains an extensive index which cross-references all documents and manual pages contained within all six volumes of 4.3BSD manuals. The index was prepared with the aid of an "intelligent" automated indexing program from Thinking Machines Corp. (which also donated a great deal of machine time and programming assistance), along with considerable human intervention from Mark Seiden. Key words, phrases and concepts are referenced by abbreviated document name and page number.

UNIX Programmer's Reference Manual (PRM)

The following sections from Volume 1 of the original UPM: section 2 (system calls), section 3 (libraries), section 4 (special files), section 5 (file formats).

UNIX Programmer's Supplementary Documents, Volume 1 (PS1)

These two volumes contain documents which supplement the manual pages in *The UNIX Programmer's Reference Manual* for the Virtual VAX-11 version of the system as distributed by U.C. Berkeley.

Languages in common use (other languages in Programmer's Supplement, volume 2)
The C Programming Language – Reference Manual
A Portable Fortran 77 Compiler
Introduction to the f77 I/O Library
Berkeley Pascal User's Manual
Berkeley VAX/UNIX Assembler Reference Manual

General Reference
Berkeley Software Architecture Manual (4.3 Edition)
An Introductory 4.3BSD Interprocess Communication Tutorial
An Advanced 4.3BSD Interprocess Communication Tutorial

Programming Tools
Lint, A C Program Checker
A Tutorial Introduction to ADB
Debugging with dbx
Make – A Program for Maintaining Computer Programs
An Introduction to the Revision Control System
An Introduction to the Source Code Control System
YACC: Yet Another Compiler-Compiler
LEX – A Lexical Analyzer Generator
The M4 Macro Processor

Programming Libraries
Screen Updating and Cursor Movement Optimization

UNIX Programmer's Supplementary Documents, Volume 2 (PS2)

Documents of Historical Interest
The UNIX Time–Sharing System
UNIX 32/V – Summary
UNIX Programming – Second Edition
UNIX Implementation
The UNIX I/O System

Other Languages
The Programming Language EFL
Berkeley FP User's Manual
Ratfor – A Preprocessor for a Rational FORTRAN
The FRANZ LISP Manual

Database Management
Ingres (Version 8) Reference Manual

UNIX System Manager's Manual (SMM)

This volume contains manual pages and supplementary documents related to system operation, administration and maintenance and is intended primarily for system administrators. The information in these documents applies to the Virtual VAX-11 version of the system as distributed by U.C. Berkeley.

Section 8 of the original UPM

System Installation and Administration
Installing and Operating 4.3BSD on the VAX
Building 4.3BSD UNIX Systems with *Config*
Using ADB to Debug the Kernel
Disc Quotas in a UNIX Environment
Fsck – The UNIX File System Check Program
Line Printer Spooler Manual
Sendmail Installation and Operation Guide
Timed Installation and Operation Guide
UUCP Implementation Description
USENET Version B Installation
Name Server Operations Guide

Supporting Documentation
Bug Fixes and Changes in 4.3BSD
Changes to the Kernel in 4.3BSD
A Fast File System for UNIX
4.3BSD Networking Implementation Notes
Sendmail – An Internetwork Mail Router
On the Security of UNIX
Password Security – A Case History
A Tour Through the Portable C Compiler
Writing NROFF Terminal Descriptions
A Dial–Up Network of UNIX Systems
The Berkeley UNIX Time Synchronization Protocol

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Manual prices are shown below. This cost does not include shipping and handling from New Jersey, which will depend on the quantity ordered and distance shipped. Sites ordering manuals will be billed for postage and handling by the publisher (Howard Press).

Manual	Cost*
User's Manual (3 volumes)	$25.00/set
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Ordering

Manuals will be available on or before November 1st, 1986. To order, return a completed "4.3BSD Manual Reproduction Authorization and Order Form" to the USENIX office along with a check or purchase order for the cost of the manuals. You must be a USENIX Association Institutional or Supporting member. Checks and purchase orders should be made out to Howard Press. Orders will be forwarded to the publisher after license verification has been completed, and the manuals will be shipped to you directly from the publisher.*

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usenix!jsq

The IEEE P1003.1 Portable Operating System for Computer Environments Committee is sometimes known colloquially as the UNIX Standards Committee. They have recently published the 1003.1 "POSIX*" Trial Use Standard. According to its Foreword:

"The purpose of this document is to define a standard operating system interface and environment based on the UNIX Operating System documentation to support application portability at the source level. This is intended for systems implementors and applications software developers."

Copies are available at $19.95, with bulk discounts available. To order, call

> IEEE Computer Society
> (714) 821-8380

Request *IEEE 1003.1 Trial Use Standard* – Book #967.

The Trial Use Standard will be available for comments for a period of about a year. The current target for a Full Use Standard is Fall 1987. IEEE has initiated the process to have the 1003.1 effort brought into the International Organization for Standardization (ISO) arena.

There is a paper mailing list through which interested parties may get copies of drafts of the standard. To get on it, or to submit comments directly to the committee, mail to:

> James Isaak
> Chairperson, IEEE/CS P1003
> Charles River Data Systems
> 983 Concord St.
> Framingham, MA 01701
>
> decvax!frog!jim

Sufficiently interested parties may join the working group. The next scheduled meetings of the working group of the committee are

September 17-19, 1986	Palo Alto, CA hosts: Amdahl, HP and Sun
December 9-11, 1986	Atlantic City, NJ same time as X3J11
March 2-6, 1987	Toronto, Ont.
June 8-12, 1987	Phoenix, AZ (the week of the USENIX Conference)
September 1987	New Orleans, LA

There is also a balloting group (which intersects with the working group). Contact the committee chair for details.

Related working groups are:

group	subject	co-chairs
1003.2	shell and tools	Hal Jespersen (Amdahl) Don Cragun (Sun)
1003.3	verification	Roger Martin (NBS) Carol Raye (AT&T)

1003.1 and 1003.2 will meet concurrently in Palo Alto on September 17.

There is frequent discussion of issues related to the various P1003 committees in the Usenet newsgroup **mod.std.unix** (soon to be known as **comp.std.unix**).

The Abstract of the 1003.1 Trial Use Standard adds:

"This interface is a complement to the C Programming Language in the C Information Bulletin prepared by Technical Committee X3J11 of the Accredited Standards Committee X3, Information Processing Systems, further specifying an environment for portable application software."

The liaison from X3J11 (sometimes known as the C Standards Committee) to P1003 is

> Don Kretsch
> AT&T
> 190 River Road
> Summit, NJ 07901

A contact for information regarding publications and working groups is

> Thomas Plum
> Vice Chair, X3J11 Committee
> Plum Hall Inc.
> 1 Spruce Avenue
> Cardiff, NJ 08232

There is frequent discussion of X3J11 in the Usenet newsgroup **mod.std.c** (that newsgroup will eventually be known as **comp.std.c**).

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* POSIX is a trademark of the IEEE.

The /usr/group Standard is the principle ancestor of P1003.1:

/usr/group Standards Committee
4655 Old Ironsides Drive, Suite 200
Santa Clara, CA 95054

The price is still $15.00.

Heinz Lycklama of Interactive Systems Corp. is the /usr/group institutional representative to P1003.1.

The System V Interface Definition (The Purple Book): this is the AT&T standard and is one of the most frequently-used references of the IEEE 1003 committee.

System V Interface Definition, Issue 2
Select Codes 320-011 (Volume 1) and 320-012 (Volume 2) or Select Code 307-127 (both volumes).

AT&T Customer Information Center
2833 North Franklin Road
Indianapolis, IN 46219

1-800-432-6600, operator 77.

The price is $37 for each volume or $57 for the pair. Major credit cards are accepted for telephone orders: mail orders should include a check or money order. Previous SVID owners should have received a discount coupon to upgrade to Release 2 for only $37.

Volume 1 is essentially equivalent to the whole previous SVID; Volume 2 is mostly commands and a few add-ons (e.g. *curses*). A third volume is expected in the last quarter of 1986 to cover new items in System V Release 3, such as streams and networking. There may be an upgrade discount similar to the previous one. A draft copy is reputed to be available now to source licensees.

The *X/OPEN Portability Guide* (The Green Book) is another reference frequently used by IEEE 1003. X/OPEN is "A Group of European Computer Manufacturers" who have produced a document intended to promote the writing of portable facilities. (They now have member computer manufacturers from outside Europe.) Their flyer remarks (in five languages), "Now we all speak the same language in Europe."

The book is published by

Elsevier Science Publishers
Book Order Department
P.O. Box 211
1000 AE Amsterdam
The Netherlands

or, for those in the U.S.A. or Canada:

Elsevier Science Publishers Co Inc.
P.O. Box 1663
Grand Central Station
New York, NY 10163

The price is Dfl 275,00 or US $75.00. According to the order form, "This price includes the cost of one update which will be mailed automatically upon publication."

Call for Papers: Human-Computer Interaction

A major North American conference focusing on the improvement of interaction between humans and computers will be held in Toronto, April 5-9, 1987.

The event will bring together specialists in computer graphics and human-computer interaction to present research results, discuss issues of mutual concern, and take part in specialized training courses. It will focus on making computers easier to use. Participation is encouraged from both academia and industry.

The Conference is a combination of CHI '87 (Human Factors in Computing Systems) and GI '87 (Graphics Interface). The annual CHI conference (sponsored by the ACM (Association for Computing Machinery) Special Interest Group on Computers and Human Interaction, SIGCHI) is the leading forum for the presentation of original designs and research in all aspects of human-computer interaction. The annual Graphics Interface conference, sponsored by the Canadian Man-Computer Communications Society (CMCCS), is the oldest regularly scheduled computer graphics conference.

For information, contact:

Wendy Walker
Conference Coordinator
CHI + GI '87 Conference Office
Computer Systems Research Institute
University of Toronto
10 Kings College Road, Room 2002
Toronto, Ont. CANADA M5S 1A4
(416) 978-5184
WWalker.CHI@Xerox.Com

Pre-Announcement & Call for Papers

The USENIX Association will hold its Winter 1987 Technical Conference in Washington D.C. on January 21–23, 1987. This announcement provides early information about the date of events as well as persons to contact for further information. Pre-registration materials containing detailed conference information along with registration and hotel reservation forms will be mailed in early November.

> *NOTE:* The 1987 UniForum Conference, sponsored by /usr/group, will run concurrently with USENIX. The UniForum Conference will be held at the Washington D.C. Convention Center.

Meeting Headquarters

Omni Shoreham
2500 Calvert Street N.W.
Washington D.C. 20008

Schedule of Events

On each day of the conference one technical session topic and selected tutorial classes will be held concurrently.

Technical Sessions

Emphasis will be placed on three topic areas in a workshop-oriented setting, scheduled as follows:

Wednesday,	January 21	What It Is To Be UNIX: A Few Simple Notions and Where They Lead
Thursday,	January 22	UNIX Performance
Friday,	January 23	UNIX-Based Data Management Systems

USENIX Tutorial Program

The USENIX Association will once again offer its well-respected tutorial program. Licensed tutorials on 4.3BSD and System V internals as well as tutorials on writing device drivers, network protocols, local area networks, software development techniques, windowing systems, performance analysis, artificial intelligence and graphics are being planned.

These tutorials focus on essential areas of UNIX technology, providing in-depth coverage of a number of topics. They are taught by leading experts, aimed at an audience of software professionals and technical managers, and should be immediately applicable to UNIX systems development and maintenance. This is your opportunity to learn from an expert at a reasonable cost and at a convenient time.

The tutorial program has experienced a constantly increasing demand for its offerings at recent USENIX Conferences. Several tutorials sell out before pre-registration closes. Attendance is limited, and pre-registration is strongly recommended. On-site registration will be allowed only if space permits.

What It Is To Be UNIX:

A few simple notions and where they lead

On January 21, USENIX will feature seven invited talks by some of the leading experts in the UNIX field. The talks will examine and evaluate the key aspects of UNIX, its evolution, its past and present roles, its various communities, and its successes and failures in meeting these communities' needs and objectives.

Given the nature of the conference and its objectives, the preparation departs from the normal procedures in that the speakers and their topics have already been chosen. Furthermore, each speaker has been assigned an "uncle" from the program committee to help prepare and coordinate the papers in an attempt to ensure a comprehensive, consistent and cohesive coverage of the theme. Consequently there will be no call for papers for this session.

The seven speakers and their working titles are:

John Mashey - *MIPS Computer, Inc.*
  UNIX — The Lever

Eric Allman – *Britton Lee, Inc.*
  UNIX — The Data Forms

Steve Johnson – *The Dana Group*
  UNIX — The Language Forms

John Mullen – *Communicating Machinery Corp.*
  UNIX and Networking — A Separate Peace

Peter Collinson – *University of Kent, Canterbury*
  UNIX — The Social Disease

Dennis Ritchie – *AT&T Bell Laboratories*
  UNIX — Threat or Menace

Mike O'Dell – *Maxim Technologies*
  UNIX — The World View

For suggestions or further information about the talks, contact:

David Tilbrook
Quantime, Ltd.
17 Bedford Sq.
London WC1, England
(44) 1-637-7061

Deborah Scherrer
mt Xinu
2560 Ninth Street, Suite 312
Berkeley, CA 94710
(415) 644-0146
ucbvax!mtxinu!scherrer

Program Committee

David Tilbrook (Program Chair) – *Quantime, Ltd., Imperial College, University of London*
Deborah Scherrer (Assistant Chair) – *mt Xinu, Inc.*
Neil Groundwater – *Sun Microsystems, Inc.*
Nigel Martin – *The Instruction Set*
Jim McKie – *Bell Communications Research*
Kirk McKusick – *University of California, Berkeley*
Norman Wilson – *AT&T Bell Laboratories*

UNIX Performance

On January 22, USENIX will present a technical session focusing on performance and UNIX Systems. Topics applicable to UNIX Systems might include but are not limited to the following:

- Performance Data Gathering, Presentation and Analysis
- Performance Aspects of Real Time Systems
- Case Studies
- Performance Prediction Methodologies
- Techniques for Improving System Performance
- Meeting Performance Constraints
- Program Performance Tools (e.g., Profilers, Monitors, Optimizers)
- Measuring and Predicting Network Performance
- Multiprocessor and/or Distributed Systems

Papers or extended abstracts are due by September 15, 1986. Notification of acceptance will be given by October 15, and camera-ready copy of accepted papers must be received by November 20. Proceedings will be distributed at the conference. Papers should be 8 to 12 pages in length and submitted to:

Herb Schwetman
MCC
P.O. Box 200195
Austin, TX 78720
(512) 834-3428
dc-perf@sally.utexas.edu
ut-sally!dc-perf

Program Committee

Herb Schwetman (Chair) – MCC
Bob Brown – RIACS-NASA
John Chambers – MCC
John Quarterman – University of Texas

About the USENIX Association

The USENIX Association is a non-profit association of individuals and institutions interested in fostering innovation and sharing ideas, software, and experience where UNIX and UNIX-like systems and the C Programming Language are concerned. USENIX sponsors technical conferences and workshops and an annual vendor exhibition; publishes ;login: (a bimonthly newsletter); and serves as coordinator of a software exchange for appropriately licensed members. The individual and institutional members of USENIX are interested in problem solving with a practical bias, with research that works, and with timely responsiveness within a community made up of executives and managers, programmers, and academics.

If you did not receive this announcement directly and wish to be on the mailing list for receipt of the pre-registration packet please contact:

USENIX Conference Office
P.O. Box 385 ▪ Sunset Beach, CA 90742
Telephone (213) 592-1381 ▪ (213) 592-3243

PLEASE POST

UNIX-Based Data Management Systems

On January 23, USENIX will explore the state of the art of UNIX-based data management systems. The day will be in two parts:

Morning: User Experience
This session is a combination of invited talks and those chosen from the submitted abstracts (see below). We are particularly looking for people to give talks about their applications: how they have designed the application and database for a particular DBMS, what features led them to choose that particular DBMS, whether their expectations were met. We are also looking for people who have resolved the data integrity problems inherent in applications that replicate data across workstations and mainframes.

Afternoon: Advances (or Steps Backwards?)
The afternoon session is composed of invited talks and panels, and talks or panels chosen from submitted abstracts.

Topics include, but are not limited to:

How Deep Should a DBMS Go?
How much of a general purpose OS can/should a DBMS use?
Is it practical to build a DBMS on top of a distributed file system? To use virtual memory as a locking mechanism?

How High Should a DBMS Go?
Are DBMSs best used as "application programming environments" or is there a use for programmerless, very fancy user interfaces?

What Is the Role of:
AI/Expert System/Object Oriented databases?
CAD/CAM, pictographic, spatial databases?
Why not just GREP your data?

Extended abstracts (2–4 pages), papers (9–12 pages), or proposals for panels must be submitted by September 15. Please send these to:

Paula Hawthorn
Britton Lee, Inc.
14600 Winchester Blvd.
Los Gatos, CA 95030

or use electronic mail:

ucbvax!mtxinu!blia!dbms-day

Authors will be notified of acceptance by October 15. Camera-ready copy of accepted papers must be received by November 20. Proceedings will be distributed at the conference.

Program Committee:
Paula Hawthorn (Chair) – Britton Lee, Inc.
David DeWitt – University of Wisconsin
Judith Obarr – Functional Systems International
Lou Katz – Metron Computerware, Ltd., Oakland, CA
{ucbvax|attmail|usenix}!lou

Tutorials to be Offered in Washington

In addition to three one-day technical sessions, the USENIX Association will again offer its widely acclaimed tutorial program. There will be 15 tutorials offered in Washington.

As of press time, the following tutorials had been scheduled for the Washington, DC, meeting in January:

Wednesday, January 21

Software Development Using C and UNIX
Rob Kolstad, Convex Computer Corporation
System V Internals
Steve Buroff, AT&T Information Systems
Designing User Interfaces, Documentation, and Presentation Graphics
Aaron Marcus, Aaron Marcus & Associates
Performance Measurement/Analysis
TBA
UNIX Networking
Martin Levy, AGS/Computers

Thursday, January 22

Introduction to 4.3BSD Internals
Thomas E. Doeppner, Jr., Brown University
Device Driver Design
Dan Klein, Tartan Labs
Network File System (NFS)
Mark Stein, Sun Microsystems

Advanced UNIX Programming in C
Carol Meier, .profile
Advanced System V Systems Administration
Rebecca Thomas and Rik Farrow, UNIX/WORLD

Friday, January 23

Advanced 4.3BSD Internals
Marshall Kirk McKusick and Mike Karels
University of California, Berkeley
Managing a Local Area Network
Evi Nemeth, University of Colorado
Windowing Systems Implementations
David Rosenthal, Sun Microsystems
UNIX System V Remote File Sharing (RFS)
Mike Padovano and Kang Yeuh
AT&T Information Systems
Artificial Intelligence and the UNIX Environment
TBA

As many tutorials in Denver last January and in Atlanta in June were sold out prior to the beginning of the conference, pre-registration is recommended. Registration materials will be sent to all USENIX members in the near future. For further information, call or write:

USENIX Conference Office
P.O. Box 385
Sunset Beach, CA 90742
(213) 592-1381

Future Meetings

**USENIX 1987 Summer Conference and Exhibition
Phoenix**

The USENIX 1987 Summer Conference and Exhibition will be held on June 8-12, 1987, at the Hyatt Regency Hotel in Phoenix, Arizona. There will be a conference, tutorials, and vendor exhibits.

**USENIX 1988 Winter Conference and UniForum
Dallas**

The USENIX 1988 Winter Conference will be held on February 10-12, 1988, at the Registry Hotel in Dallas, Texas. It will be concurrent with UniForum 1988, which will also be in Dallas. The Conference will feature tutorials and technical sessions.

**USENIX 1988 Summer Conference and Exhibition
San Francisco**

The USENIX 1988 Summer Conference and Exhibition will be held on June 21-24, 1988, at the Hilton Hotel in San Francisco, California. There will be a conference, tutorials, and vendor exhibits.

Long-term USENIX Conference Schedule

Winter	'87	Shoreham Hotel, Washington DC	Jan 21-23
Summer	'87	Hyatt Regency, Phoenix, AZ	Jun 8-12
Winter	'88	Registry Hotel, Dallas, TX	Feb 10-12
Summer	'88	Hilton Hotel, San Francisco, CA	Jun 21-24
Summer	'89	Hyatt Regency, Baltimore, MD	Jun 13-16
Summer	'90	Marriott Hotel, Anaheim, CA	Jun 11-15

The locations and dates for the 1989 and 1990 winter meetings have not yet been fixed.

Summary of Board of Directors' Meeting in Denver, January 14-17

Attendance

Present at the meeting were Thomas E. Ferrin, Stephen C. Johnson, Lou Katz, Lewis Law, Alan G. Nemeth (President), Deborah K. Scherrer, Waldo M. Wedel – Board members; James E. Ferguson – Executive Director; Mike O'Dell – Atlanta Program Chairman.

/usr/group

There was extensive discussion concerning the joint meetings with /usr/group. It was concluded that there should be periodic meetings of USENIX and /usr/group in the same city, such meetings to run concurrently. It was felt that there should be free admission of USENIX Conference attendees to the vendor exhibit and that registrants should get a discount on registration for the "other" conference. USENIX will most likely meet in Washington in January 1987 and in Dallas in January 1988 concurrently with /usr/group.

There was discussion of the size of the two groups; of the numbers of attendees at the conferences; and of the different concerns and priorities of the two groups. /usr/group refers to itself as a "non-profit trade organization," USENIX is a "technical and professional association."

Tax Audit

The on-going IRS audit was discussed. It was noted that the audit was for the year prior to the one in which tax-exempt status had been granted. The issue of the exhibits and the income raised therefrom was raised. It was pointed out that selling at the exhibit might cause problems for USENIX.

The results of the IRS audit will be distributed when available.

Membership

There was a discussion of the large number of members whose accounts were in arrears – who had not paid 1986 dues. There was also some discussion of recruiting and increasing the membership.

Graphics Workshop

There was a report on the Second Graphics Workshop, held in Monterey in December. There were 78 attendees and the general response was extremely positive. Though it was thought that the workshop might have lost money, it was not a large sum.

Future Workshops

There was a discussion as to whether the Association wanted to keep on conducting such workshops. The general feeling was that by and large USENIX should keep on sponsoring workshops.

Manuals

It was reported that USENIX had now sold almost half of the third printing of the 4.2BSD manuals. About 13,000 sets have been printed. It was hoped that 4.3BSD would be released shortly and that soon thereafter 4.3 manuals would be available. It was noted that there had been an offer by Mark Seiden to do a full index using an automated indexing system, TMI. It was felt that it was not inappropriate to use the income from the 4.2 manuals for the 4.3 project.

Portland Papers

It was reported that publishing the best of the Portland papers in *SP&E* was becoming a depressing experience: only one author had rewritten and resubmitted his paper. There will be no special issue of USENIX Portland papers.

IEEE P1003 Committee

There was a discussion of USENIX' representative's report and his request as to how he should vote on certain issues. The Board instructed him to "vote his conscience" unless the Board told him to do otherwise.

Atlanta Conference

There were several reports relating to arrangements for Atlanta in June. Exhibitors seem to be down. There was a discussion of Peter Johnson and IPW. The Board voted to accept the settlement proposal from Peter Johnson and Industrial Presentations West to offer advice to John Donnelly on the Atlanta exhibits. This will be the full and final settlement of monies due IPW.

Stargate

Lauren Weinstein discussed what was going on in the Stargate project. The Board expressed unhappiness with the lack of direction and purpose. Weinstein was directed to come in with a plan and a proposal which would answer certain specific questions:

- How can Stargate benefit the USENIX membership?
- Who and what will the Stargate operating organization be?
- How do they propose to operate the Stargate service program?
- Is there some organization other than USENIX who should be the primary funding source – AT&T, /usr/group, etc.?
- How much money is needed to make Stargate operational?

Weinstein agreed to have a written proposal ready for the March meeting of the Board.

Election Procedures

Randy Frank, chairman of the Nominating Committee, gave the list of nominees to the President. A timetable for election procedures was established. The Board and the Executive Director went over the bylaws on elections.

Licensed Tutorials

The problems, legal and otherwise, relating to admissions to licensed tutorials were discussed at length. The problems had to do with limiting attendance to authorized employees of institutional members. It was agreed that both AT&T and Berkeley would have to be asked about nondisclosure agreements.

Next Meeting

It was agreed that the next Board meeting would be held in Napa, CA, March 19-20-21, 1986, and that all nominees would be invited to that meeting, their expenses to be paid by the Board.

– P.H.S

Summary of Board of Directors' Meeting in Napa, March 19-21

Attendance

Present at the meeting were: Thomas E. Ferrin, Stephen C. Johnson, Lou Katz, Lewis Law, Allen G. Nemeth (President), Deborah K. Scherrer, Michael D. Tilson, Waldo M. Wedel – Board members; Marshall Kirk McKusick, Mike O'Dell, John S. Quarterman, David A. Yost – Director nominees; Judy DesHarnais – Conference Coordinator; John Donnelly – Exhibit Manager; James E. Ferguson – Executive Director; Paul Manno – Atlanta Conference Host representative.

Nominations and Elections

There was a lengthy discussion of the nomination and election procedures, and of the actual election schedule. There had been a number of problems with the nominating procedure and there were proposals as to changes for the 1988 elections.

Denver Meeting

There had been many favorable comments on the Denver meeting. One of the more visible results was the 470 memberships generated by the check-off box on the registration form. Several Board members said they had felt there should have been a reception; there will be one in Atlanta. There was an expression of sentiment that the registration fee was high if one attended only symposia and did not attend any of the tutorials. There was also some comment on USENIX' distribution of the invitations to the Gould reception. It was agreed that if there are any limited-attendance receptions in the future, the sponsor should distribute the invitations, not the Association.

Atlanta Tutorials

It was announced that there would be fifteen different tutorials offered in Atlanta, the five most popular being offered twice, for a total offering of twenty tutorials. Contracts had already been mailed to all instructors.

Executive Director

Jim Ferguson resigned as Executive Director effective June 1. The Board appointed a subcommittee to conduct a search for a new Executive Director.

Vendor Exhibit

The activity of vendors requesting space in Atlanta has been very slow. In comparison with previous years USENIX is running well behind this year. Several reasons for this were suggested: the tight money situation – many companies can only afford one show per year and opt for UniForum; NCC in Las Vegas is only a week after Atlanta; USENIX does not permit sales at the exhibit. There was also a discussion of companies which do not want exhibit space, but do want a hospitality suite.

Technical Program

The work of the Program Committee was reviewed. It appeared that a truly outstanding technical program had been scheduled for Atlanta. There will be 48 presentations on the program, representing under 45% of the papers submitted.

Fees and Memberships

The Board approved a one-time half-year membership for individuals who wished to join at registration in Atlanta. The Board also set the other registration fees and tutorial fees for the Atlanta meeting.

The Board further granted complimentary registrations to current and newly-elected Board members, to /usr/group Board members, to USENIX staff members, to one author for each paper presented, to no more than two instructors per tutorial, and to the members of the Atlanta Program Committee.

Licensed Tutorials

The question of attendance at licensed tutorials was brought up. There was a discussion of the verification procedure, of the right to attend licensed tutorials, and the basis for institutional memberships. The questions of restricting attendance and of fulfilling AT&T's requirements were taken up. It was decided that for Atlanta, the procedures should remain as they have been in the past, but that a proposal for a new procedure should be brought to the Board in Atlanta, possibly to be implemented in Washington.

Toronto UNIX Show

There was a report on the Toronto UNIX Show, which had been sponsored by /usr/group/cdn and had drawn about 2,000 people. /usr/group/cdn would like to put on a conference and tutorial program together with USENIX in Spring 1987. It was decided that this program would be too close to the Washington meeting to be done well, but that USENIX would continue thinking about the possibilities of a meeting in Toronto for the future.

Cross Registration in DC

The issue of cross registration at UniForum and the USENIX Conference in Washington was raised. There was a lengthy discussion of the various past problems where /usr/group was concerned. It was noted that USENIX wanted to continue meeting concurrently with /usr/group and that some sort of a discount for registrants was not out of line. A committee was delegated to negotiate a $50 cross registration discount via a $25 check-off box on the registration forms.

Washington Program

The local host and symposium topics for Washington, DC, were discussed. A variety of topics was mentioned, as well as several possible local hosts. Discussion was to be continued at a later date.

Future meetings

The problem of future meetings with /usr/group was raised. While the Washington dates were seen as satisfactory, those for Dallas in 1988 are quite late (February 9 through 12) and those for 1989 (February 28 through March 3) are impractical for USENIX. It was noted that a concurrent meeting with /usr/group in 1989 would be impossible.

IRS Audit

The documents from the IRS audit of the 1983 tax year were discussed. The Executive Director was authorized to sign Form 4549 and to pay the claimed amount ($6214).

Equipment Purchases

The Executive Director was authorized to purchase an AT&T Merlin telephone system for the office and to order a new photocopier. Purchase of a laser printer for use in the Boulder Office was authorized. Mailing equipment purchases for the Conference Office were authorized.

4.2BSD Manuals

The 3rd printing of the 4.2 manuals had sold out very rapidly, owing to a purchase of 700 sets by Los Alamos and of 600 sets by Daisy Systems. A 4th printing has been ordered.

4.3BSD Manuals

There was a lengthy discussion of the 4.3 manuals, the typesetting and the indexing (to be done by Mark Seiden). It was hoped that the manuals would be available in the autumn, as Berkeley expects to release 4.3 in the spring. The question of authorization from Berkeley and/or AT&T was mentioned. Authorization for the new manuals will be necessary prior to publication.

Stargate

It was reported by Katz that he had had a lengthy conversation with Bruce Weiner about the Stargate project. He had also spoken to Weinstein, who had not prepared a business plan, though the Board had requested him to do so in Denver. Katz and O'Dell volunteered to put together a specific request for a proposal. It was suggested that an RFP be put on the net.

Long Range Planning

It was thought that the end of a long meeting was not the appropriate time or place to attempt to do Long Range Planning. It was decided to hold a special meeting the Sunday before the Atlanta conference at which no Board business, but only long range planning for the Association would be discussed. Katz volunteered to make up a list of topics and to chair the meeting.

– P.H.S.

Long Range Planning Committee

Prior to the Atlanta conference, there was an all-day Long Range Planning meeting, Sunday, June 8, chaired by Lou Katz. At that time, it was concluded that

"The USENIX Association is a technical and professional organization devoted to breeding innovation with a historical and a present UNIX bias. It promotes the exportation and importation of ideas; encourages research that works and problem-solving with a practical bias. The USENIX Association serves a full spectrum of technical expertise and aids in the sharing of ideas, software and experience. The Association is concerned with both technical currency and responsiveness to the community."

It was suggested to the Board of Directors that a greater appeal for membership to the graduate student computer science community be mounted.

There were a number of suggestions as to possible new services. Among these were:

- Listing of pointers to standards and technical reports in *;login:*
- Evolution of *;login:* and the possible publication of a technical journal
- Software distribution changes and improvements
- Joint symposia with universities
- Continued production of the 4.xBSD manuals

Recommendations were made to the Board in Atlanta.

– P.H.S.

;login:

Elliott D. Buchdruker
Certified Public Accountant
Pier 16, The Embarcadero
San Francisco, CA 94111
(415) 362-8704

The Board of Directors
USENIX ASSOCIATION

The accompanying balance sheet of USENIX ASSOCIATION as of November 30, 1985 and the related statements of revenue and expenses and changes in financial position for the year then ended have been compiled by me.

A compilation is limited to presenting in the form of financial statements information that is the representation of management. I have not audited or reviewed the accompanying financial statements and, accordingly, do not express an opinion or any other form of assurance on them.

Elliott D. Buchdruker

March 14, 1986

USENIX ASSOCIATION
BALANCE SHEET
NOVEMBER 30, 1985
(Unaudited)

ASSETS

CURRENT ASSETS:
Cash in bank:
Mechanics Bank	$(23,790)
First Interstate Bank	273,560
First Interstate Bank, Conference Account	10,028	259,798
Petty cash		50
Marketable securities		203,823
Prepaid conference costs		52,007
Prepaid tax		10,926

Total current assets 526,604

FIXED ASSETS, AT COST 42,859
Less - accumulated depreciation (9,215) 33,644

$560,248

LIABILITIES AND FUND BALANCE

CURRENT LIABILITIES:
Payroll taxes payable	$ 646
Deferred revenue (Note 3)	16,395

Total current liabilities 17,041

FUND BALANCE:
Balance, December 1, 1984 $359,899
Excess of revenue over expenses for the year ended November 30, 1985 183,308 543,207

$560,248

See accompanying notes to financial statements.

ELLIOTT D. BUCHDRUKER, C.P.A.

Volume 11, Number 5   September/October 1986   23

USENIX ASSOCIATION
STATEMENT OF REVENUE AND EXPENSES
FOR THE YEAR ENDED NOVEMBER 30, 1985
(Unaudited)

REVENUE:

Membership dues		$119,494
Conference income (Exhibit A)		251,523
Publications		23,900
Manuals		60,368
Dividend income		18,097
Interest income		16,334
"T" shirts		2,464
		492,180

EXPENSES:

Program services:

Newsletter	$ 40,996	
Tape service	25,168	
Usenet software development project	4,326	
Proceedings	1,509	
Stargate	2,330	
		74,329

Supporting services:

Salaries	73,831	
Payroll taxes	2,953	
Consulting and contract labor	36,009	
Office management fees	9,000	
Computer	7,550	
Telephone	17,965	
Travel	29,120	
Refunds	860	
Postage and shipping	7,723	
Depreciation	4,722	
Rent	15,052	
Equipment rental, maintenance and repair	3,786	
Printing	2,070	
Office supplies	5,810	
Executive search	2,195	
Penalties	250	
Legal and accounting	10,307	
Insurance	3,699	
Taxes and licenses	261	
Miscellaneous	1,880	
		234,543
		308,872

REVENUE OVER EXPENSES — $183,308

See accompanying notes to financial statements.

ELLIOTT O. BUCHORUKER, C.P.A.

USENIX ASSOCIATION
CONFERENCE INCOME – EXHIBIT A
FOR THE YEAR ENDED NOVEMBER 30, 1985
(Unaudited)

	Other Conferences	Monterey Conference	Dallas Conference	Portland Conference Exhibit B	Total
REVENUE:					
Contributions				$ 5,000	$ 5,000
Registration fees		$ 7,870	113,765	240,720	362,355
Tutorial fees			96,440	129,250	225,690
Exhibit sales				94,600	94,600
Conference proceedings			2,175	3,000	5,175
Late fees			345	20	365
Other	1,073		37	1,825	2,935
	1,073	7,870	212,772	474,405	696,120
EXPENSES:					
Refunds	79				79
Pre-announcement			2,920		2,920
Pre-registration			2,700	4,514	7,214
Registration packet including conference proceedings			37,643	39,021	76,664
Tutorial expense			14,015	31,555	45,570
Registration processing			7,128	10,193	17,321
Advertising			4,281	5,193	9,474
Service charge for processing credit charges			3,474	4,810	8,284
Audio visual	889		5,851	5,698	12,438
Temporary office help			8,936	7,965	16,901
Telephone			870	1,555	2,425
Printing and reproduction	9		1,297	3,979	5,285
Consulting fees		800	20,000	20,000	40,800
Travel expenses		2,187	1,735	7,331	11,253
Hotel expenses			8,676	2,170	10,846
Shuttle bus					
Coffee breaks, lunch and dinner		2,714	11,632	4,367	18,713
Shipping and postage		3,359	8,986	9,879	22,224
Computer expenses		82	1,848	3,732	5,662
Registration booths, rental and setup		996		996	996
Alderbrook dinner			2,069		2,069
Auditorium and building rent				42,714	42,714
"T" shirts				17,387	17,387
Association contract				9,813	9,813
Decorator				14,321	14,321
Sales commissions				3,286	3,286
Fee – Industrial Presentations West				2,387	2,387
Miscellaneous			14,047	4,443	10,693
	4,491	10,119	146,737	283,250	444,597
Conference income	$(3,418)	$(2,249)	$ 66,035	$191,155	$251,523

See accompanying notes to financial statements.

ELLIOTT O. BUCHORUKER, C.P.A.

USENIX ASSOCIATION
PORTLAND CONFERENCE AND INDUSTRIAL PRESENTATION WEST
INCOME - EXHIBIT B
FOR THE YEAR ENDED NOVEMBER 30, 1985
(Unaudited)

	Portland Conference	Industrial Presentations West	Total
REVENUE:			
Contribution - Tektronix	$ 5,000		$ 5,000
Registration fees	240,720		240,720
Tutorial fees	129,250		129,250
Conference proceedings	3,000		3,000
Exhibit sales		$94,600	94,600
Other	965	870	1,835
	378,935	95,470	474,405
EXPENSES:			
Refunds	12,890		12,890
Pre-announcement	4,514		4,514
Pre-registration	10,193		10,193
Registration packet including conference proceedings	31,555		31,555
Tutorial expense	39,021		39,021
Advertising	5,193		5,193
Service charge for processing credit charges	4,810		4,810
Audio visual	5,698		5,698
Temporary office help	7,965		7,965
Telephone	1,063	492	1,555
Printing and duplication		3,979	3,979
Consulting fee	20,000		20,000
Travel expense	4,958	2,373	7,331
Shuttle bus	2,170		2,170
Hotel expenses	3,325	1,042	4,367
Coffee breaks, lunch and dinner	9,879		9,879
Shipping and postage	2,868	864	3,732
Aldetbrook dinner	42,714		42,714
Auditorium and building rent	9,387	8,000	17,387
"T" shirts	9,813		9,813
Association contract		14,321	14,321
Decorator		3,286	3,286
Sales commissions		2,387	2,387
Fee - Industrial Presentation West		14,047	14,047
Miscellaneous	1,906	2,537	4,443
	229,922	53,328	283,250
Conference Income	$149,013	$42,142	$191,155

See accompanying notes to financial statements.

ELLIOTT D. BUCHORUKER, C.P.A.

USENIX ASSOCIATION
STATEMENT OF CHANGES IN FINANCIAL POSITION
FOR THE YEAR ENDED NOVEMBER 30, 1985
(Unaudited)

SOURCES OF FUNDS:		
Net Income		$183,308
Add - depreciation not requiring a current outlay of cash		4,222
		$187,530
APPLICATION OF FUNDS:		
Increase in working capital		$163,136
Purchase of fixed assets		24,394
		$187,530
INCREASE (DECREASE) IN WORKING CAPITAL COMPONENTS:		
Cash		$151,829
Marketable securities		18,097
Prepaid conference costs		9,795
Prepaid expense		(12,275)
Deferred revenue		(16,395)
Accrued expenses		12,731
Payroll taxes payable		(646)
		$163,136

See accompanying notes to financial statements.

ELLIOTT D. BUCHORUKER, C.P.A.

USENIX ASSOCIATION
NOTES TO FINANCIAL STATEMENTS
NOVEMBER 30, 1985
(Unaudited)

1. Corporate Background

   Usenix Association was incorporated in 1980. The principal
   purpose of the organization is to provide educational benefits,
   including the exchange and communication of research and tech-
   nological ideas pertaining to Unix^{tm} and Unix related computer
   systems. It is a nonprofit public charity established under
   Section 501 (c)(3) of the Internal Revenue Code. Contri-
   butions to the organization are deductible by the donors.

2. Summary of Significant Accounting Policies

   Marketable securities are recorded at cost. Usenix Association
   uses the direct charge-off method of recognizing doubtful
   accounts. Property and equipment are recorded at cost. The
   Company follows the practice of capitalizing all expenditures
   for property and equipment in excess of $200. Depreciation is
   calculated according to the accelerated cost recovery system
   for property placed in service after 1980. The lives are
   comparable to those used under generally accepted accounting
   principles. For all other property, depreciation is calculated
   over the estimated useful lives of the assets on both the
   straight line and the accelerated basis.

3. Deferred Revenue

   Deferred revenue consists of advance payment of conference fees
   received for future conferences.

ELLIOTT D. BUCHDRUKER, C.P.A.

Book Review

The UNIX C Shell Field Guide by Gail Anderson and Paul Anderson
(Englewood Cliffs, NJ: Prentice-Hall, Inc., 1986) $23.95

Reviewed by Marc D. Donner

ucbvax!ibm.com!donner

Back when I was first learning UNIX the conventional wisdom held that you used the C shell as your login shell because it had aliases and history but that you wrote all of your shell scripts in the old Bourne shell because it had a simpler interface. More conventional wisdom held that you only wrote shell scripts if they were short because the performance was so terrible, the only exceptions being things that were executed rarely or that had to be portable as files without recompiling, for example the **rc** script.

The UNIX C Shell Field Guide is a lengthy tutorial introduction to the C Shell. The recent fame of our favorite operating system has resulted in an explosion of publications offering to teach us things about UNIX. Despite the fact that I rarely learn anything from any of them, I regularly purchase all the latest offerings in the hope that I will find some great insight offered up. Let's look at this new book and see what it has to offer.

This is a tutorial, so experienced hackers can go back to sleep. The English is reasonably good, a definite plus in a tutorial. The prose is warm and friendly, something that will make many a novice user feel good, but it is a bit too cutesy for my taste. I found my hackles rising several times in response to phrasing that I found patronizing. This is a clear sign that I am not part of the intended market for this book.

Now that we have identified the intended audience, novices, let's take a look at it from their perspective. As a novice's tool it is fairly daunting. The book is almost an inch thick, holding 374 pages. The table of contents is ten pages long, making it difficult to grasp the overall structure and content of the book looking at it. The index is quite good, and it is the last section of the book, to the authors' credit. All too often the publisher appends many pages of trash at the end of a trade book like this, making the job of finding the index so difficult as to destroy the utility of the book. I won't dignify their pun of replacing the heading for the X section of the index with IX with any comment.

The authors took the three Jesuit principles of teaching to heart: repetition, repetition, repetition. Each important topic is covered several times, though their presentation would be much better if the cross referencing were better. The overview section on aliases should refer the user to the chapter and page of the in-depth section on aliases, for example.

A tutorial should provide the reader with some simple examples to try, and this one does that quite well. Some of the examples are a bit contrived, detracting from their instructional and mnemonic value. The explanation associated with the examples is fairly spotty. Sometimes it is clear and informative, and sometimes it contains flat statements of fact unilluminated by any attempt at motivation. For example, when exhibiting a call to **find** with the argument '{}' to indicate where to substitute the path name, the book simply states the meaning of the argument, with no motivation or apology. Perhaps it isn't fair to pick on **find**, widely known to be the most obnoxious command in UNIX, but maybe the authors shouldn't have used it in an example.

There is one fairly serious technical flaw in this book. The most important thing they could teach about the C Shell or any shell is the environment state problem. It is important to emphasize that a shell script, executing in a child process, cannot modify the state of the parent shell. The only way that a shell script can modify the parent environment is to be invoked by the source command. This restricts the script to the shell language interpreted by the parent or login shell. This problem is so important and so confusing to novices that it almost merits a chapter of its own.

The most important thing that I look for in a tutorial is some help in organizing the material so that I can structure it and remember it. This is best done by identifying and highlighting important general principles and returning to them from time to time in the exposition and in the examples. This book's greatest weakness is its shortage of general organizing principles, though this drawback might better be ascribed to the subject matter. The book is full of interesting details, but short on compelling generalizations or mnemonics.

Most chapters have a summary of key points and a collection of hints and cautions, a wonderful idea. Unfortunately, the things that are warned about in the hints and cautions sections are not always the important things. The problem with environment modification mentioned above doesn't make it to the hints and cautions section, for example. Overall, this book doesn't do a very good job of warning the user about the dangers of using the C Shell. The C Shell is very powerful, but also very dangerous. When I taught a bunch of novices how to use it a while ago most of my presentation was concerned with hazardous things to watch out for ... the power and function are sufficiently exhibited in the man pages.

Does the world need another book about the C Shell? Does the world need this one? That's difficult to answer. This book has its charm, but I wonder about its utility. If I were asked to design a book about the C Shell, it would be quite a bit different from this one. It would be no more than 100 pages long and it would be primarily reference material, organized for easy reference. The recent AT&T C handbook is an outstanding example of how to do this well. If it had a tutorial section, it would be much shorter than this one and would emphasize general principles through examples, rather than details.

Atlanta Videotapes Available

As announced in the July/August *;login:*, the three presentations which opened the Atlanta USENIX Conference were videotaped. Orders for the tapes are now being accepted.

There are two tapes:

Tape one contains Jon Bentley's "Pictures of Programs," a talk on the merits and insights of graphic presentation of algorithmic problems, including the greedy travelling salesman and a wire-wrapping problem. In addition, this tape contains the Awards Ceremonies and Presentations.

Tape two contains two music presentations: Mike Hawley's "MIDI Music Software for UNIX" and Peter Langston's "(201) 644-2332 or Eedie and Eddie on the wire: An experiment in Music Generation."

Each tape is available in either VHS or Beta format. Inside the US and Canada, the tapes are $20 each, including postage and handling charges. Elsewhere in the world, the tapes are $30 each, including air mail charges.

Place orders directly with USENIX Association, including a check or money order in US dollars for the full amount due. Please remember to specify which tape(s) you want and which format you desire. Allow 4 to 6 weeks for delivery.

Please send in your orders by October 31, if possible, so that we don't encounter problems with tape duplication vendor quantity requirements.

– P.H.S.

Publications Available

The following publications are available from the Association Office or the source indicated. Prices and overseas postage charges are per copy. California residents please add applicable sales tax. Payments **must** be enclosed with the order and **must** be in US dollars payable on a US bank.

USENIX Conference and Workshop Proceedings

Meeting	Location	Date	Price	Overseas Mail Air	Surface	Source
USENIX	Atlanta	Summer '86	$25	$25	$5	USENIX
Graphics Workshop II	Monterey	December '85	$ 3	$ 7	$5	USENIX
USENIX	Denver	Winter '86	$20	$25	$5	USENIX
USENIX	Portland	Summer '85	$25	$25	$5	USENIX
USENIX	Dallas	Winter '85	$20	$25	$5	USENIX
Graphics Workshop I	Monterey	December '84	$ 3	$ 7	$5	USENIX
USENIX	Salt Lake	Summer '84	$25	$25	$5	USENIX
UniForum	Wash. DC	Winter '84	$30	$20		/usr/group

EUUG Publications

The following EUUG publications may be ordered from the USENIX Association office.

The EUUG Newsletter, which is published four times a year, is available for $4 per copy or $16 for a full-year subscription. The earliest issue available is Volume 3, Number 4 (Winter 1983).

The July 1983 edition of the EUUG Micros Catalog is available for $8 per copy.

NZUUG Offers Kiwis

The New Zealand UNIX Systems Users Group, Inc., has produced small badges, t-shirts, and sweatshirts. The t-shirts carry the NZUUG kiwi front and back, the sweatshirts carry the logo on the left breast and are available in both round neck and V-neck styles. The badge is pale blue enamel, about ¾" across. The retail prices are:

Badges	$NZ 5.00
T-shirts	$NZ 12.00
Sweatshirts	$NZ 25.00

Postage and shipping extra. The New Zealand dollar is approximately US $0.49.

Orders should be sent to:

R. W. Pascoe
NZUUG
P.O. Box 13056
University of Waikato
Hamilton, New Zealand

The kiwi contains two trademarks of AT&T.

Local User Groups

The USENIX Association will support local user groups in the following ways:

• Assisting the formation of a local user group by doing an initial mailing for the group. This mailing may consist of a list supplied by the group, or may be derived from the USENIX membership list for the geographical area involved. At least one member of the organizing group must be a current member of the USENIX Association. Membership in the group must be open to the public.

• Publishing information on local user groups in *;login:* giving the name, address, phone number, net address, time and location of meetings, etc. Announcements of special events are welcome; send them to the editor at the USENIX office.

Please contact the USENIX office if you need assistance in either of the above matters. Our current list of local groups follows.

In the **Boulder,** Colorado area a group meets about every two months at different sites for informal discussions.

Front Range Users Group
USENIX Association Exhibit Office
Oak Bay Building
4750 Table Mesa Drive
Boulder, CO 80303

John L. Donnelly   (303) 499-2600
usenix!johnd

Dallas / Fort Worth UNIX User's Group
Seny Systems, Inc.
5327 N. Central, #320
Dallas, TX 75205

Jim Hummel   (214) 522-2324

In the **Washington, D.C.,** area there is an umbrella organization called Capitol Shell. It consists of commercial, government, educational, and individual UNIX enthusiasts. For information and a newsletter write:

Capitol Shell
8375 Leesburg Pike, #277
Vienna, VA 22180

Rick Wilder   (203) 476-5261
seismo!cal-unix!capish

In **Minnesota** a group meets on the first Wednesday of each month. For information contact:

UNIX Users of Minnesota
Carolyn Downey   (612) 934-1199

In the **New York City** area there is a non-profit organization for users and vendors of products and services for UNIX systems.

Unigroup of New York
G.P.O. Box 1931
New York, NY 10116

Ed Taylor
(212) 513-7777
{attunix,philabs}!pencom!taylor

In the **Atlanta** area there is a group for people with interest in UNIX or UNIX-like systems, which meets on the first Monday of each month in White Hall, Emory University.

Atlanta UNIX Users Group
P.O. Box 12241
Atlanta, GA 30355-2241

Marc Merlin   (404) 442-4772
Mark Landry   (404) 365-8108

In the **Seattle** area there is a group with over 150 members, a monthly newsletter, and a software exchange system. Meetings are held monthly.

Bill Campbell   (206) 232-4164
Seattle UNIX Group Membership Information
6641 East Mercer Way
Mercer Island, WA 98040

uw-beaver!tikal!camco!bill

A new UNIX users group is starting in the **Coral Springs**, Florida, area. For information, contact:

S. Shaw McQuinn   (305) 344-8686
8557 W. Sample Road
Coral Springs, FL 33065

In the **northern New England** area is a group that meets monthly at different sites. Contact one of the following for information:

Emily Bryant   (603) 646-2999
Kiewit Computation Center
Dartmouth College
Hanover, NH 03755

decvax!dartvax!emilyb

David Marston   (603) 883-3556
Daniel Webster College
University Drive
Nashua, NH 03063

In the **San Antonio** area the San Antonio UNIX Users (SATUU) meet twice each month with the second Wednesday being a dinner meeting and the third Wednesday being a "roving" meeting at a user site.

San Antonio UNIX Users
7950 Floyd Curl Dr. #102
San Antonio, TX 78229-3955

William T. Blessum, M.D.   (512) 692-0977
ihnp4!petro!bles!wtb

An informal group is starting in the **St. Louis** area:

St. Louis UNIX Users Group
Plus Five Computer Services
765 Westwood, 10A
Clayton, MO 63105

Eric Kiebler   (314) 725-9492
ihnp4!plus5!sluug

A UNIX/C language users group has been formed in **Tulsa**. For current information on meetings, etc. contact:

Pete Rourke
$USR
7340 East 25th Place
Tulsa, OK 74129

The **New Zealand** group provides an annual Workshop and Exhibition and a regular newsletter to its members.

New Zealand UNIX Systems User Group
P.O. Box 13056
University of Waikato
Hamilton, New Zealand

Ten Years Ago in ;login: (a.k.a. UNIX News)

*(The following is from UNIX News
#10, October 1976 – PHS)*

Security Patch

The following patch to the **su** command should be installed as soon as possible at all installations. The bug it fixes allows an unprivileged user to become super-user under rare circumstances.

```
ed s2/su.c
        /bad pass/a
        goto error;
        .
        w
        q
cc -c -O s2/su.c
chmod 06711 a.out
mv a.out /bin/su
```

Third Computer Graphics Workshop

Winter Meeting in Washington in January

Access to UNIX Standards

An Expert System for Installing 4.2BSD

Change of Address Form

Please fill out and send the following form through the U.S. mail to the Association Office at the address above.

Name: _____ Member #: _____

OLD: _____ NEW: _____

_____ _____

_____ _____

_____ _____

Phone: _____

uucp: {decvax,ucbvax}! _____